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10/583,410	06/20/2006	Gen Masuda	062689	3571
38834	7590	03/18/2009		
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP			EXAMINER	
1250 CONNECTICUT AVENUE, NW			THOMAS, BRENT C	
SUITE 700			ART UNIT	PAPER NUMBER
WASHINGTON, DC 20036			4151	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/583,410	<b>Applicant(s)</b> MASUDA ET AL.
	<b>Examiner</b> BRENT THOMAS	<b>Art Unit</b> 4151

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-7 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_ is/are allowed.  
 6) Claim(s) 1-7 is/are rejected.  
 7) Claim(s) \_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date 0/20/2006, 10/27/2006
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_.  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

**DETAILED ACTION**

***Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1 and 5-7 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 of copending Application No. 10/583,408. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a composition comprising polymer coated inorganic particles in an organic resin wherein the common features are described in the table below.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Instant Application	Application No. 10/583,408
<p>1. An <u>inorganic-organic composite</u> flame retardant composition comprising an <u>inorganic hydroxide</u> having a <u>polymer layer</u>, and an <u>organic resin</u>; which is characterized in that <u>the polymer layer is formed by graft polymerization</u> and has <u>an average thickness of at least 3 nm</u>.</p> <p>5. The inorganic-organic composite flame retardant composition of any one of claims 1 to 4, which is characterized in that the inorganic hydroxide is in the form of <u>particles having an average particle size of 1 nm to 100 µm</u>.</p> <p>6. The inorganic-organic composite flame retardant composition of any one of claims 1 to 4, which is characterized in that the <u>inorganic hydroxide</u> is one or more selected from the group consisting of <u>aluminum hydroxide, magnesium hydroxide, potassium hydroxide and calcium hydroxide</u>.</p> <p>7. The inorganic-organic composite flame retardant composition of any one of claims 1 to 4, which is</p>	<p>1. An <b>inorganic-organic composite</b> functional composition comprising an <b>organic layer-bearing inorganic material</b> and an <b>organic resin</b>, which is characterized in that the organic layer is formed in an ionic liquid-containing solvent.</p> <p>2. The inorganic-organic composite functional composition of claim 1 which is characterized in that the <b>organic layer is a polymer layer</b>.</p> <p>3. The inorganic-organic composite functional composition of claim 1 or 2 which is characterized in that the <b>polymer layer is a layer formed by graft polymerization</b>.</p> <p>4. The inorganic-organic composite functional composition of claim 1 or 2 which is characterized in that the <b>polymer layer has an average thickness of at least 5 nm</b>.</p> <p>5. The inorganic-organic composite functional composition of claim 1 or 2 which is characterized in that the inorganic material is in the form of</p>

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<p>characterized in that the <u>inorganic hydroxide is magnesium hydroxide and/or aluminum hydroxide</u>, and the polymer layer is a layer composed of a styrene resin and/or an olefin resin.</p>	<p><b>particles having an average particle size of 1 nm to 100 <math>\mu\text{m}</math>.</b></p> <p>6. The inorganic-organic composite functional composition of claim 1 or 2 which is characterized in that the inorganic material is one or more selected from the group consisting of alkaline earth metal carbonates, alkaline earth metal silicates, alkaline earth metal phosphates, alkaline earth metal sulfates, metal oxides, <b>metal hydroxides</b>, metal silicates and metal carbonates.</p>
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3. Claims 1,2, and 5-7 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4, 6-11, 13, 14 and 16 of copending Application No. 11/578,179. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a composition comprising polymer coated inorganic particles in an organic resin wherein the common features are described in the table below.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Instant Application	Application No. 11/578,179
<p>1. An inorganic-organic composite flame retardant <u>composition</u> comprising an <u>inorganic hydroxide</u> having a <u>polymer layer</u>, and an <u>organic resin</u>; which is characterized in that the <u>polymer layer is formed by graft polymerization</u> and has an average thickness of at least 3 nm.</p> <p>2. The inorganic-organic composite flame retardant composition of claim 1 which is characterized by having a <u>percent weight loss, when acid-treated by 5 minutes of immersion in an aqueous solution containing 20 wt % of hydrogen chloride, which satisfies the following relationship with respect to the percent weight loss, when similarly acid-treated by an untreated inorganic hydroxide-containing composition that includes, instead of the inorganic hydroxide in said inorganic-organic composite</u></p>	<p>1. A resin composition, characterized by comprising a base material having a cyano group-bearing <b>organic layer</b>, and an <u>organic resin</u>.</p> <p>4. The resin composition of any one of claim 1 which is characterized in that the resin composition has a <u>percent weight loss, when acid treated by 5 minutes of immersion in an aqueous solution containing 20 wt % of hydrogen chloride, which satisfies the following relationship with respect to the percent weight loss on similar acid treatment by an untreated base material-containing composition that includes, instead of the base material having a cyano group-bearing organic layer in said resin composition, a like amount (base material basis) of a base material lacking a cyano group-bearing organic layer:</u> <math>(\text{percent weight loss of resin composition}) / (\text{percent weight loss of untreated base material}) \leq 0.5</math></p>

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<p>flame retardant composition, a like amount (inorganic hydroxide basis) of an inorganic hydroxide lacking a polymer layer:</p> <p>(percent weight loss of inorganic-organic composite flame retardant composition)/(percent weight loss of untreated inorganic hydroxide-containing composition)&gt;0.50.</p> <p>5. The inorganic-organic composite flame retardant composition of any one of claims 1 to 4, which is characterized in that the inorganic hydroxide is in the form of <u>particles having an average particle size of 1 nm to 100 µm</u>.</p> <p>6. The inorganic-organic composite flame retardant composition of any one of claims 1 to 4, which is characterized in that the inorganic hydroxide is one or more selected from the group consisting of aluminum hydroxide, <u>magnesium hydroxide</u>, potassium hydroxide and calcium hydroxide.</p> <p>7. The inorganic-organic composite flame retardant composition of any one of claims 1 to 4, which is characterized in that the <u>inorganic hydroxide is magnesium hydroxide</u> and/or aluminum hydroxide, and the polymer layer is a layer composed of a styrene resin and/or an olefin resin.</p>	<p>weight loss of untreated base material-containing composition)&lt;0.10.</p> <p>6. The resin composition of any one of claim 1 which is characterized in that the base material is an <b>inorganic</b> substance.</p> <p>7. The resin composition of claim 6 which is characterized in that the inorganic substance is one or more selected from the group consisting of alkaline earth metal carbonates, alkaline earth metal silicates, alkaline earth metal phosphates, alkaline earth metal sulfates, metal oxides, <b>metal hydroxides</b>, metal silicates and metal carbonates.</p> <p>8. The resin composition of claim 7 which is characterized in that the inorganic substance is a <b>metal hydroxide</b>.</p> <p>9. The resin composition of claim 8 which is characterized in that the metal hydroxide is one or more selected from the group consisting of <b>magnesium hydroxide</b>, potassium hydroxide and calcium hydroxide.</p> <p>10. The resin composition of claim 1 which is characterized in that the base material is composed of <b>particles having an average particle size of 1 nm to 100 µm</b>.</p> <p>11. The resin composition of claim 1 which is characterized in that at least part of the cyano group-bearing <b>organic layer</b> is a layer derived from (meth)acrylonitrile.</p> <p>13. The resin composition of claim 1 which is characterized in that the cyano group-bearing organic layer is a <b>polymer layer</b>.</p> <p>14. The resin composition of claim 13 which is characterized in that the <b>polymer layer is a layer formed by graft polymerization</b>.</p> <p>16. The resin composition of claim 13 which is characterized in that the <b>polymer layer has an average thickness of at least 1 nm</b>.</p>
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***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Senuma et al. (U.S. Patent No. 5,296,534 hereafter Senuma).

8. With regard to claim 1, Senuma (col. 2 lines 2-7, col. 3 lines 45-47) teaches an inorganic-organic composite flame retardant composition comprising an inorganic hydroxide having a polymer layer formed by graft polymerization via a coupling agent, and an organic resin.

9. Senuma does not teach a thickness of at least 3 nm.

10. However, Senuma (col. 3 lines 48-49, col. 4 lines 20-52) teaches that a styrene based resin utilized to modify MgOH has a molecular weight of 50,000 to 200,000, which translates to at least 495 repeat units of styrene homopolymers which are further modified with an organopolysiloxane having at least 250 siloxane units. One of ordinary skill in the art would know that styrene monomer polymerizes at olefinic unsaturation sites, creating a -(c-c)- backbone. One of ordinary skill in the art would also know that the length of a carbon-carbon bond is approximately .15 nm (Lange's Handbook of Chemistry, 15th Edition), in which case it would require minimum 20 styrene monomers to provide a thickness of 3 nm.

11. In light of the above discussion, it would be obvious to one having ordinary skill in the art, that a styrene based polymer having a minimum molecular weight of 50,000 would intrinsically provide MgOH with a coating thickness greater than 3 nm.

12. With regard to claim 2, Senuma (col. 2 lines 2-7, col. 3 lines 48-49, and col. 4 lines 20-52) teaches an inorganic-organic composite flame retardant composition comprising an inorganic hydroxide having a polymer layer, and an organic resin.

13. Senuma is silent with respect to the percent weight loss after acid treatment. However in light of the fact that the coating on the inorganic hydroxide particles of the

prior art are also magnesium hydroxide particles as claimed in the instant invention.

Therefore if the same particles are subjected to the same pretreatment, the weight loss factor should also be within the same range.

14. With regard to claim 3, Senuma (col. 2 lines 2-7, col. 3 lines 48-49, and col. 4 lines 20-52) teaches an inorganic-organic composite flame retardant composition comprising an inorganic hydroxide having a polymer layer, and an organic resin.

15. Senuma is silent with respect to the dielectric constant. However in light of the fact that the inorganic particle material, size, and coating are substantially the same as that recited in the instant claims magnesium hydroxide composition wherein magnesium hydroxide has the same particle size and overlapping amount will exhibit the claimed properties.

16. With regard to claim 4, Senuma (col. 2 lines 2-7, col. 3 lines 48-49, and col. 4 lines 20-52) teaches an inorganic-organic composite flame retardant composition comprising an inorganic hydroxide having a polymer layer, and an organic resin.

17. Senuma is silent with respect to the elastic modulus. This property would be determined by the type of polymer selected, type of filler selected, and the coating on the filler. However, in light of the fact that the matrix, inorganic particle material, size, and coating are substantially the same as that recited in the instant claims a reasonable basis exists to believe that said composition exhibits the claimed properties.

18. With regard to claim 5, Senuma (col. 2 lines 55-57) teaches inorganic hydroxide particles with a diameter of 0.1 to 15  $\mu\text{m}$ . This overlaps the claimed range and it would have been obvious to one of ordinary skill in the art at the time the invention was made

to so include as one would have expected them to have the same properties, absent a showing to the contrary.

19. With regard to claim 6, Senuma (col. 2 lines 2-7) teaches the inorganic hydroxide is magnesium hydroxide.

20. With regard to claim 7, Senuma (col. 2 lines 2-7) teaches that the inorganic hydroxide is magnesium hydroxide and the polymer layer is a styrene resin.

In the light of the above disclosure it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize teachings of Senuma and thereby arrive at the instant invention, since Senuma discloses composition comprising the same basic components, which include magnesium hydroxide and polymer.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lange's Handbook of Chemistry (15th Edition) Edited by: Dean, J.A. © 1999 McGraw-Hill.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRENT THOMAS whose telephone number is (571)270-7737. The examiner can normally be reached on Monday - Thursday, 7:30am-5:00pm (est.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Ortiz can be reached on (571)272-1206. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katarzyna Wyrozebski/  
Primary Examiner, Art Unit 1796

BT